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ORIGINAL ARTICLE

Smoking among dental students at King Saud University: Consumption patterns and risk factors

Abdullah S. AlSwuailem *, **Majed K. AlShehri, Salwa Al-Sadhan**

College of Dentistry-King Saud University, Riyadh, Saudi Arabia

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Abstract *Objective:* To assess smoking prevalence among dental students at King Saud University (KSU) and to determine possible risk factors of tobacco use.

Methods: A self-addressed invitation letter was sent to all dental students (males and females) at KSU requesting participation in this study. Data on smoking habits, associated risk factors, and demographic factors, such as age, marital status, residency status, the student's year of study, and grade point average, were collected by an electronic self-administered questionnaire sent via email. Data were analyzed using SPSS. Significant differences between different groups were assessed with a Pearson Chi-Square test at $\alpha = 0.05$. Logistic regression analysis was used to calculate the odds ratio (OR) and 95% confidence interval (95% CI) and to determine the effect of different risk factors on students' smoking habits.

Results: Of the 600 registered dental students, 400 students responded (230 males, 170 females), representing a response rate of 67%. More male than female students were current smokers (27.6% vs. 2.4%, $p < 0.001$). Most smokers used shisha tobacco only ($N = 35$, 51.5%), followed by both shisha tobacco and cigarettes ($N = 17$, 25%), or cigarettes only ($N = 16$, 23.5%). Male students were about 4 times more likely to be smokers if all or most of their friends were smokers compared to students who had some friends who smoked (OR = 3.9, 95% CI = 1.9–7.7). A high proportion of current smokers (47.8%) reported stress as the main reason for smoking. Twenty-six percent of dental students ($N = 87$) who are currently nonsmokers reported that they have used tobacco at some point in their lives. Over two thirds of sampled students (63%) believed that public tobacco usage is not well addressed in the current college curriculum.

Conclusion: Approximately one in every four male dental students at KSU is a smoker. Having friends who are smokers was the most important risk factor associated with smoking. There is a general belief among dental students that public tobacco use is not well addressed in the dental college curriculum.

* Corresponding author. Tel.: +96 614677315.

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1. Introduction

Tobacco use is a major risk factor for many health problems. The World Health Organization (WHO) estimates that over one billion individuals currently smoke tobacco, with

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approximately five million deaths a year being attributed to tobacco. If this pattern of smoking continues, WHO estimates that tobacco-attributable mortality will exceed eight million deaths per year by 2030 (WHO, 2008). Among men in industrialized countries, smoking contributes to 40–45% of all cancer deaths and 35% of cardiovascular disease deaths, as well as to 90–95% of lung cancer death, over 85% of oral cancer death, and 75% of deaths due to chronic obstructive lung disease in those 35 to 69 years old (Johnson, 2001).

Tobacco use has many oral adverse effects. Cancers of the oral cavity and larynx rank second for the highest relative risk of cancer due to smoking (IARC, 2004). In addition, the risk of developing oral cancer is significantly associated with the amount of tobacco smoked and the duration of smoking in all countries that have reported epidemiological studies (Warnakulasuriya et al., 2010). Other oral adverse effects include staining of teeth, reduced abilities to smell and taste, smoker's melanosis, smoker's palate, oral candidiasis, and implant failure (Reibel, 2003). Smoking increases the severity of periodontal disease and jeopardizes almost all forms of periodontal therapy (Johnson and Slach, 2001). The adverse risks of smoking may extend to those living with smokers. For example, children who are exposed to smoking have almost double the risk of developing dental caries in primary teeth compared to children not exposed to smoking (Aligne et al., 2003).

Tobacco can be consumed in forms besides cigarette smoking. For example, pipe smoking (nargile, shisha) is commonly practiced in the eastern Mediterranean region (Baddoura and Wehbeh-Chidiac, 2001; Maziak et al., 2004a,b,c). This type of smoked tobacco contains high concentrations of carbon monoxide, nicotine, tar, and heavy metals (Sajid et al., 1993; Shafagoj and Mohammed, 2002). Because of the presence of these products and other toxins, pipe smokers may be at a greater risk of serious respiratory diseases and cancers (Al-Fayez et al., 1988; Gunaid et al., 1995). The high prevalence of pipe smoking can be attributed to positive sensory characteristics, such as the attractive smell and taste, especially to the younger generation (Maziak et al., 2004a). Tobacco can also be consumed as smokeless tobacco, where tobacco is placed in the oral vestibule in contact with the mucous membrane to allow nicotine absorption (Johnson, 2001). Smokeless tobacco contributes significantly to the incidence of oral cancers (Critchley and Unal, 2003).

Despite the widespread recognition that tobacco contributes to serious health problems, the prevalence of tobacco use continues to increase globally (Muzyka et al., 2009). With many restrictions and regulations on tobacco use in developed countries, the tobacco industry has opted to search for other markets. More than one billion people worldwide smoke tobacco, corresponding to about one quarter of all adults (WHO, 2008). The burden of tobacco use is the greatest in low- and middle-income countries and is expected to increase more rapidly in these countries in coming decades (WHO, 2009). In Saudi Arabia, tobacco consumption is a major public health problem, with increasing use among adolescents (Abdalla et al., 2007; Mandil et al., 2011). It has been reported that the prevalence of smoking among university students in Saudi Arabia ranges between 2.4 and 37% (Bassiony 2009). Smoking prevalence among students varies based on the major of study, with lower smoking prevalence in science and professional colleges (Koura et al., 2011; Abolfotouh et al., 1998). In addition, smoking among males is consistently higher, both at the general population and university student levels (Al-Haqwi et al., 2010; Al-Kaabba et al., 2011; Al-Turki et al., 2010).

Several investigations have examined tobacco use among dental students (Alomari et al., 2006; Dumitrescu, 2007; Komu et al., 2009; Khami et al., 2010). Dental professionals have a lower smoking rate than other health professionals (Smith and Leggat, 2007) or the communities in which they live. Furthermore, smoking tobacco is relatively uncommon among contemporary dental students in industrialized countries compared to dental students in developing countries (Smith and Leggat, 2007). In Saudi Arabia, cigarette smoking has been reported among 13% and 2% of male and female dental students, respectively (Almas et al., 2003).

Physicians are generally perceived as role models for their patients (Bolinder et al., 2002) and may play a significant role in encouraging smokers to quit (CDC, 2005). However, physicians that smoke may not be as effective as nonsmoking physicians in addressing tobacco cessation interventions (Olive and Ballard, 1992; Pipe et al., 2009). The current smoking habits among dental students at King Saud University (KSU) are unknown. Therefore, the purpose of this study was to assess the smoking prevalence among dental students at KSU and to determine possible risk factors of tobacco use.

2. Methods

This cross-sectional study was conducted at the dental school-KSU. The dental school at KSU was the first dental school established in Saudi Arabia in 1975 and is located in the capital city of Saudi Arabia (Riyadh) in the central region. It consists of two separate campuses for male and female students. An electronic self-administered questionnaire was developed in Arabic language based on WHO-Global Adult Tobacco Survey (GATS) questionnaires (WHO-GATS) and relevant literature. Ethical approval to conduct this study was granted by the Ethics Committee of the College of Dentistry Research Center at KSU. Data collected included smoking habits, associated risk factors, and demographic factors, such as age, gender, marital status, residency status, current level of study, grade point average (GPA), and parents' educational levels.

Smoking habits were categorized as nonsmoker, current smoker, or former smoker. Students' smoking habits were assessed as: time starting smoking (before or after starting college), duration of smoking (in years), types (cigarettes, shisha, or both), frequency (daily or weekly), and quantity (number of cigarettes smoked daily). Students were also asked to determine their preferred place for smoking, as well as what triggered the initiation of smoking (friends' influence, smoking parents, stress, experimenting, reward for hard work, and boredom). Students' intentions to quit in the future were assessed, as were smoking habits among parents, siblings, and friends. Students' opinions were collected regarding passive smoking, banning of smoking in public places, role of the dentist in patients' smoking cessation, and the adequacy of current dental school curriculum in addressing the problem of tobacco consumption. The accuracy and clarity of the designed questionnaire were assessed on a sample of 20 dental interns.

Dental students were recruited for the study by first obtaining a complete list of names and email addresses from the

school admission office. Consent to participate was achieved by giving a personalized invitation letter in a sealed envelope, including a brief description of the research and a request to participate, to all students in their regularly scheduled classes. Students were asked to either accept or reject participation and verify their email addresses if agreeing to participate. Participation was encouraged by offering 20 gift certificates (150 Saudi Riyals) as a drawing for those who participated. An email that contained a link to the electronic survey was sent to those who agreed to participate, with a reminder email sent three days later and a final reminder sent three days after that.

Data were collected and prepared for statistical analysis with the Statistical Package for the Social Sciences (SPSS) for Windows (version 21, SPSS Inc., Chicago, IL, USA). Assessment of statistical significance between groups was performed using a Pearson Chi-Square test at $\alpha = 0.05$. Logistic regression analysis was used to compute the odds ratio (OR) and 95% confidence interval (95% CI) and to determine the effect of different risk factors on smoking habits.

3. Results

3.1. Demographic characteristics

Of the 600 registered dental students (384 males, 216 females), 400 students (230 males, 170 females) completed the survey, yielding an overall response rate of 67%. Student participation varied by the level of study between 46% and 90%. Table 1 presents the student distribution by gender, current study level, age, GPA, and smoking status. Fifty-two percent of the participants were 21 years old or younger.

3.2. General smoking habits

The overall smoking prevalence was 17% (68/400). It was higher among males than females (27.8% vs. 2.4%, $p < 0.001$, Table 2). Most smokers used shisha only ($N = 35$, 51.5%), followed by both shisha and cigarettes ($N = 17$, 25%), and cigarettes only ($N = 16$, 23.5%). Most students who used tobacco (59%) indicated that they started using tobacco after starting university. Smoking prevalence in males was not significantly associated with the level of study (30% for students in their fourth and fifth years vs. 27% for students in their first, second, and third years).

3.3. Pattern of smoking habits

Most cigarette smokers (69%) were daily smokers (male $N = 22$, 73%, female $N = 0$, 0%), with 14 of these daily cigarette smokers (64%) smoking more than half of a pack of cigarettes (11–20 cigarettes) daily. Moreover, 15 of the 32 male cigarette smokers (47%) indicated that they started smoking within the last three years. Only 7 of the 52 (14%) shisha smokers were daily smokers (14.6% male, 0% female), with the remainder smoking weekly. Most of the weekly shisha smokers indicated that they smoked once ($N = 26$, 58%) or twice ($N = 10$, 22%) per week. Most shisha smokers indicated that they started smoking shisha within the past 3 years ($N = 27$, 52%).

3.4. Reasons for smoking

Students reported that they started smoking for the following reasons: stress ($N = 32$, 47.8%), boredom ($N = 14$, 20.9%), experimentation ($N = 10$, 14.9%), peer pressure ($N = 6$, 9.0%), and as a reward ($N = 5$, 7.5%). Most smokers indicated that they usually smoke in the company of others, particularly during leisure time with friends ($N = 34$, 51%) or in commercial coffee shops ($N = 18$, 27%). Approximately three quarters of smoking students expressed a desire to quit tobacco in the future ($N = 47$). In addition, 57 of the 63 smoking students (85%) believed that they can quit smoking tobacco at their own discretion. However, only 26 smoking students (39%) thought that they will definitely not smoke 5 years from now, and 15 smoking students (22%) thought they would probably not smoke 5 years from now.

3.5. Former smoking habits

Among dental students who do not currently smoke, 87 students (26%) used tobacco at some point in their lives (37.3% male, 15.1% female, $p < 0.0001$). Of 80 former tobacco users, 34 (43%) used shisha alone, 24 used cigarettes alone (30%), 22 used both shisha and ciga-

Table 1 Distribution of students according to gender, study level, age, GPA and smoking status.

		Smokers, *n* (%)	Not smokers, *n* (%)	Total
Age	[19-21]	28 (13.5%)	180 (86.5%)	208
	> =22	40 (20.8%)	152 (79.2%)	192
Gender	Male	64 (27.8%)*	166 (72.7%)	230
	Female	4 (2.4%)	166 (97.6%)	170
Marital Status	Single	65 (81.9%)	294 (18.1%)	359
	Engaged	3 (13.6%)	19 (86.4%)	22
	Married	0 (0.0%)	19 (100%)	19
Current Professional Year	I	6 (8.5%)	65 (91.5%)	71
	II	18 (18.6%)	79 (81.4%)	97
	III	14 (19.2%)	59 (80.8%)	73
	IV	14 (20.9%)	53 (79.1%)	67
	V	16 (17.4%)	76 (82.6%)	92
Residency	With Family	65 (17.5%)	306 (82.5%)	371
	With Friends	3 (13.0%)	20 (87.0%)	23
	Alone	0 (0.0%)	6 (100%)	6
GPA	< =3.99	39 (29.8%)	92 (70.2%)	131
	> =4	29 (10.8%)	240 (89.2%)	269
Total		68 (17%)	332 (83%)	400

* Statistically significant at $\alpha = 0.05$.

Table 2 Distribution of students' who consumed different types of smoking according to gender, studying level and GPA.

		Shisha *n* (%)	Cigarettes *n* (%)	Both *n* (%)	Total *n*
Gender	Male	33 (51.6%)	16 (25%)	15 (23.4%)	64
	Female	2 (50%)	0 (0%)	2 (50%)	4
Total		35 (51.5%)	16 (23.5%)	17 (25%)	68
Studying level	Junior	18 (47.4%)	10 (26.3%)	10 (26.3%)	38
	Senior	17 (56.7%)	6 (20%)	7 (23.3%)	30
Total		35 (51.5%)	16 (23.5%)	17 (25%)	68
GPA	< =3.99	19 (48.7%)	10 (25.6%)	10 (25.6%)	39
	> =4	16 (55.2%)	6 (20.7%)	7 (24.1%)	
Total		35 (51.5%)	16 (23.5%)	17 (25%)	68

rettes (28%), and 2 used smokeless tobacco with either cigarettes or shisha (3%). Most former tobacco users (79%) reported using tobacco for 1 month or less.

3.6. Effect of family and friends

Seventy-seven percent of current male smokers versus 61% of male non-smokers reported that their fathers had a college degree or higher ($p = 0.031$), and 55% of current male smokers versus 40% of male non-smokers reported that their mothers had a college degree or higher ($p = 0.041$). Of the 378 students, 116 (31%) indicated that at least one of their parents currently consume tobacco. In addition, 143 of 362 students (40%) reported that they had brothers or sisters who used tobacco. Whereas 45% of students indicated that they do not have smoking friends, 36%, 17%, and 2% of dental students indicated that some, most, or all of their friends are smokers, respectively. We only assessed the risk of family or friends that smoked for male students due to the small number of smoking female students in the selected sample.

Male smokers reported a higher proportion of at least one smoking parent than nonsmoking students (35% vs. 26%, $p = 0.14$), with a similar proportion having siblings that smoked (36% vs. 25%, $p = 0.11$). Having more friends who are smokers was a significant risk for male students becoming smokers: 49% of smokers reported that most or all of their friends were smokers compared to 22% reporting that they had some friends who smoke ($p < 0.001$). The OR for the risk of having more friends who are smokers was 3.9, with a 95% CI of [1.9, 7.7].

3.7. Effect of smoking on others

Regarding the risk of passive smoking, 92% of students believed that smoking is dangerous for the health of passive smokers. Furthermore, 56% of them indicated that they are exposed to smoke at least once a week. Approximately 88% of all students surveyed support smoking bans in public places. Among only male students, only 75% of current male smokers support smoking bans compared to 93% of non-smokers who support smoking bans ($p < 0.001$). Eighty-two percent of all students indicated that they would advise their patients who use tobacco to quit. About 92% of the sampled students believed that dentists should have a role in smoking cessation programs. In addition, about two thirds of the students thought that their advice to patients who smoke is likely to increase the chance of the patient quitting. About 63% of students believed that public tobacco use is not well addressed in the current college curriculum. In addition, 68% thought that they would need special training in tobacco cessation interventions.

4. Discussion

This cross-sectional study was conducted to assess the smoking prevalence among dental students at KSU and to determine possible risk factors associated with tobacco use. Overall, 17% of the sampled students reported that they are current smokers. Although this prevalence seems to be high considering their work in a health-related profession, similar prevalence rates have been reported among medical students. For example, Al-Kaabba and colleagues (2011) reported that 18% of medical students in Riyadh, Saudi Arabia smoked. Similarly, Al-Haqwi and colleagues (2010) found that 19% of students smoked in two new medical colleges in Riyadh. Studies from neighboring countries suggest a similar pattern. For example, Khami and colleagues (2010) found a 22% smoking rate among Iranian dental students, with a 17% smoking rate among Jordanian dental students (Alomari et al., 2006). In a review of smoking rates among dental students in 19 countries, Smith and colleagues (2007) reported rates between 3% in Canada to 47% in Greece.

We found a significant difference in smoking rates between male (27.8%) and female (2.4%) dental students, consistent with other studies (Al-Haqwi et al., 2010; Al-Kaabba et al., 2011; Alomari et al., 2006; Khami et al., 2010). Lower smoking rates among female dental students could reflect the fact that smoking by females is culturally unacceptable, especially in conservative societies like Saudi Arabia (Smith and Leggat, 2007; Memon et al., 2000). Male students in this study had a higher smoking rate than Brazil (6%) (de Andrade et al., 2006), Great Britain (7%) (Barber and Fairclough, 2006), and India (10%) (CDC, 2005). The smoking rate among male students has doubled since it was last measured in 2003 (Almas et al., 2003). Doctors are perceived as role models for their patients (Bolinder et al., 2002; Warren et al., 2011) and may play a significant role in encouraging smokers to quit (CDC, 2005). However, physicians that smoke may not be as effective as nonsmoking physicians in addressing tobacco cessation (Olive and Ballard 1992; Pipe et al., 2009). Therefore, the high prevalence of smoking among male dental students may result in adverse health outcomes not only for future dentists, but also among patients that may not receive appropriate recommendations in smoking cessation due to a lack of interest from a smoking dentist.

Smoking shisha alone or in conjunction with cigarettes accounted for 77% of current smoking habits. Other studies reported a high preference of smoking shisha both among the general public and students at health colleges. For example, Memon and colleagues (2000) reported that 57% of men and 69% of women had used shisha at least once in Kuwait. Furthermore, a study that assessed the smoking habits in 10 countries in the Middle East and North Africa found that

the most frequent type of smoking in Saudi Arabia was shisha (Khattab et al., 2012). Al-Turki (2006) found that 68% of sampled medical students in Riyadh were smoking shisha or shisha along with cigarettes. Shisha smoking has a favorable smell and taste compared to cigarettes and is growing in popularity globally (Maziak et al., 2004a). Another factor that may contribute to the increased use of shisha is the misconception of it carrying a lower risk than cigarettes by most people who use shisha (Dar-Odeh et al., 2010; Barnett et al., 2011; Al-Naggar and Saghir, 2011; Labib et al., 2007). Indeed, the different type of tobacco and, therefore, carcinogen exposure in shisha might result in a different cancer risk profile than cigarette smoking (Jacob et al., 2013).

In this study, 69% of cigarette smokers were daily smokers, whereas only 14% percent of shisha smokers were daily smokers, consistent with differences previously reported (Maziak et al., 2004b; Taha et al., 2010). This difference is not unexpected as smoking shisha is typically performed outside the home and requires special preparation (Taha et al., 2010), leading most shisha smokers (58%) to smoke only once per week. Nearly two thirds of male cigarette smokers reported consuming more than 10 cigarettes a day. This result is higher than that reported by Alomari and colleagues (2006), who found that only 11.4% of dental students in Jordan were consuming more than 10 cigarettes a day. Another study found that Romanian dental students smoked an average of 13 cigarettes per day (Dumitrescu, 2007).

We found that 59% of current smokers started smoking after starting university. In contrast, Komu and colleagues (2009) reported that 62% of healthcare college students started smoking prior to university. This difference could be explained by differences in the consumption patterns in different countries. This study found no significant differences in smoking rates between male students in their first through third years (27%) compared to those in their fourth and fifth years (30%), as also reported by Pizzo and colleagues (2010). In contrast, other studies found higher smoking rates among senior dental students than junior students (Dumitrescu, 2007; Underwood and Fox, 2000). Newbury-Birch and colleagues (2002) assessed changes in smoking rates among 47 dental students in the University of Newcastle, UK, in the second year, fifth year, and 1 year after graduation. In that study, the prevalence of cigarette smoking dropped as students progress in school from 11% in the second year to 4% and 6% in the fifth year and after graduation as dentists, respectively (Newbury-Birch et al., 2002).

Twenty-six percent of sampled students indicated that they had experimented using tobacco at some point in their lives, similar to rates reported among other healthcare college students (Komu et al., 2009). In a recent study of Saudi medical students, about 40% of students had experienced smoking at one point in their lives (Al-Kaabba et al., 2011). We found that most former tobacco users (79%) used tobacco for 1 month or less, which may suggest that using tobacco was probably prompted by curiosity or interest in experimentation.

Around half of current smokers identified stress as the main reason for starting smoking. Several studies have pointed to the stressful nature of dentistry and the stress-related problems among dental students (Newbury-Birch et al., 2002; Gordon and Rayner, 2010; Plasschaert et al. 2001). Pipe and colleagues (2009) identified stress as the main barrier identified by smoking physicians that prevented them from quitting. Newbury-Birch and colleagues (2002) reported that stress levels significantly decreased as dental students finished their dental degree. Al-Haqwi and colleagues (2010), after reporting that stress was the main reason that provoked medical students to smoke, recommended that special efforts should be taken to educate medical students on effective strategies to manage stress during their studies.

We examined several risk factors of smoking but did not find an association between the presence of a smoking family member (father, mother, brother, or sister) and smoking habits. This finding disagrees with the findings of Dar-Odeh and his group (2010), who reported a significant association between student and parental smoking habits. Similarly, for students in the College of Applied Medical Sciences at KSU, the existence of smoking parents or siblings was significantly associated with higher rates of smoking among students (Hasim, 2000).

Our findings and other studies suggest that there are higher smoking rates among dental students whose fathers and/or mothers have higher education levels (Khami et al., 2010; Taha et al., 2010). In contrast, shisha smoking rates among university students in Jordan were not associated with parental education (Dar-Odeh et al., 2010). We also found that having more smoking friends was associated with approximately 4 times the odds of being a smoker than if only some friends were smokers (OR = 3.9, 95% CI [1.9–7.7]). This figure underestimates the risk of having smoking friends because the reference group in this comparison was students who have some friends who are smokers. Students with nonsmoking friends were not considered as a reference group because only one smoking student reported that all of his friends were nonsmokers. This low frequency violates the basic assumption of the minimum number of cases required in each group needed in logistic regression analysis (Szklo and Nieto, 2007). The effect of having close friends that smoke may increase the rate of smoking among medical students in Saudi Arabia as much as 5-fold (Merdad et al., 2007).

There was a general preference to ban smoking in public places among dental students at KSU. However, nonsmoking students were 3.5 times more likely to favor smoking bans in public places than smoking students. Several other reports confirmed that most health students favor smoking bans in public places (Pipe et al., 2009; McCartan et al., 2008). In our study, 82% of students said that they would advise their smoking patients to quit smoking, and about two thirds of them thought that their advice could be effective. Similarly, Irish dental, dental hygiene, and dental nursing students believe that dentists should advise their patients to quit smoking (80%) and that this advice is likely to be effective (82%) (McCartan et al., 2008). These encouraging figures are not unexpected, given that most dental students recognize that they are role models in society (Warren et al., 2011). In addition, the Centers for Disease Control and Prevention (CDC) report on health students' attitudes on tobacco counseling found that most students surveyed believed they should have a role in counseling patients to quit smoking (CDC, 2005).

The active participation of healthcare providers in tobacco cessation programs is important because most smoking

patients either want or have attempted to stop smoking, but have failed due to uncertainty on "how to quit" (Memon et al., 2000). We found that two thirds of dental students believed that public tobacco usage is not well addressed in the current college curriculum, and they needed special training on tobacco cessation. Thus, a gap exists between the knowledge of tobacco health risks and the level of training in tobacco counseling among dental students (CDC, 2005; Warren et al., 2011). The available literature encourages reforming dental curricula to accommodate tobacco cessation programs (Khami et al., 2010; Taha et al., 2010).

One limitation of this study is related to the issue of validity for self-reported information, a common issue for surveys. Self-reported smoking status can agree with biomarker tests for tobacco use (Wong et al., 2012; Bonevski et al., 2010; Chen et al., 2002), but in some circumstances, such as with teenagers or pregnant women, self-reported smoking data may not be valid (Caraballo et al., 2004; Fakhfakh et al., 2011). Anonymous surveys or online surveys similar to the one used in this study generally have high reliability and validity (Ramo et al., 2011; Klein et al., 2007). When possible, we checked the accuracy of the data provided. For example, the proportion of dental students reporting a GPA higher or lower than 4 was similar to registrar records.

Another limitation is the relatively low response rate (67%), although this limitation is not uncommon for online surveys, which can have similar or even lower response rates (Berg et al., 2012; El Hajj et al., 2012; Hoch et al., 2012; Braun et al., 2012). We validated the sample by asking 100 randomly selected male dental students to complete a short questionnaire about their smoking habits. We found that 27 of the 100 students were current smokers, similar to the study responses (27.8%). This finding would suggest that information collected in this survey has a high validity. Finally, using ORs to assess risk of common outcomes such as smoking may introduce bias to risk estimates. Zocchetti et al. (1997) suggested that when prevalence of an outcome exceeded 10%, a difference could be observed between the prevalence rate ratio and the prevalence risk ratio (Zocchetti et al., 1997).

5. Conclusions

The results of this cross-sectional study on smoking prevalence among dental students revealed that one in every four male dental students at KSU is a smoker. Stress was identified as the main reason for smoking, and having friends who are smokers was the most important risk factor associated with smoking. Dental schools should educate and train dental students on effective strategies in managing stress during their studies. There is a general belief among dental students that public tobacco consumption is not well addressed in the dental college curriculum, and that they are not trained to implement tobacco cessation programs.

Conflict of interest

Authors declare no conflict of interest associated with this publication.

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